

EXPOSED PORE SEALING POST PATTERN- ING

Abstract

Methods and structures having pore-closing layers for closing exposed pores in a patterned porous low-k dielectric layer, and optionally a reactive liner on the low-k dielectric. A first reactant is absorbed or retained in exposed pores in the patterned dielectric layer and then a second reactant is introduced into openings such that it enters the exposed pores, while first reactant molecules are simultaneously being outgassed. The second reactant reacts in-situ with the outgassed first reactant molecules at a mouth region of the exposed pores to form the pore-closing layer across the mouth region of exposed pores, while retaining a portion of each pore's porosity to maintain characteristics and properties of the porous low-k dielectric layer. Optionally, the first reactant may be adsorbed onto the low-k dielectric such that upon introduction of the second reactant into the patterned dielectric openings, a reactive liner is also formed on the low-k dielectric.